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| APPLICATION NO. | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
|---|-------------|----------------------|---------------------|------------------|
| 10/750,722 | 12/31/2003 | Himanshu Pokharna | 42.P18070 | 1381 |
| 8791 | 7590 | 04/15/2005 | EXAMINER | |
| BLAKELY SOKOLOFF TAYLOR & ZAFMAN 12400 WILSHIRE BOULEVARD SEVENTH FLOOR LOS ANGELES, CA 90025-1030 | | | DUONG, THO V | |
| | | | ART UNIT | PAPER NUMBER |
| | | | 3743 | |

DATE MAILED: 04/15/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

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|------------------------------|------------------------|---------------------|--|
| Office Action Summary | Application No. | Applicant(s) | |
| | 10/750,722 | POKHARNA ET AL. | |
| | Examiner | Art Unit | |
| | Tho v Duong | 3743 | |

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
 - If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
 - If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
 - Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 28 January 2005.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1,2,5,7,9-14,17,19,21-26 and 28 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1,2,5,7,9-14,17,19,21-26 and 28 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|---|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Receipt of applicant's amendment filed 1/28/2005 is acknowledged. Claims 1,2,5,7,9-14,17,19,21-26 and 28 are pending. The objection to the drawing is now withdrawn in view of the amendment.

Response to Arguments

Applicant's arguments filed 1/28/2005 have been fully considered but they are not persuasive. Applicant's argument that neither Hamilton nor Bonsignore disclose a fluid containing magnetic particles and a magnetic pump to circulate the fluid through the fluid loop, has been very carefully considered but is not deemed to be persuasive. Reference to Hamilton is the primary reference, which discloses the system that has an electro-magnetic pump (114) to circulate a heat transfer medium through a fluid loop to exchange heat with a heat source. Reference to Bonsignore is relied on to show that magnetic nanoparticles is added to the heat transfer medium for the purpose of increasing thermal capacity and heat transfer rate of the system. Bonsignore further discloses that the nanoparticles are made from copper or iron, which have been considered by the applicant's disclosure to be magnetic nanoparticles.

Claim Rejections - 35 USC § 112

The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claim 24 is rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. Claim 24 does not further limit claim 12, which claim 24 depends from.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 1-2,5,7,9,10,12,13,17,19,21,22,24-26 and 28 are rejected under 35 U.S.C. 103(a) as being unpatentable over Hamilton et al. (US 5,763,951) in view of Bonsignore et al. (US 6,432,320). Hamilton discloses (figures 2-5,8) a system comprising a thermal conductive plate (108) to be placed in contact with a chip set (100); a fluid loop coupled to the plate to circulate fluid and have the fluid absorb heat from the plate; the fluid loop is coupled to a heat exchanger (110); an electromagnetic pump (114) to circulate the fluid through the fluid loop. Hamilton does not disclose that the heat exchange fluid contains water and magnetic nanoparticles. Bonsignore discloses (column 3, line 21-column 4, line 18 and column 8, lines 1-15) an improved heat transfer medium that can be used in a microprocessor cooling system, wherein the heat transfer medium contains a fluid, which may be a single fluid or a two phase fluid, and magnetic nano-particles such as iron nano-particles for the purpose of increasing thermal capacity and heat transfer rate of a heat transfer system while minimizing pump energy requirement. Since Hamilton and Bonsignore are both from the same field of endeavor and/or analogous art, it would have been obvious to one having ordinary skill in the art at the time the invention was made to use Bonsignore's teaching in Hamilton's system for the purpose of increasing thermal capacity and heat transfer rate of a heat transfer system while minimizing pump energy requirement.

Claims 11 and 23 are rejected under 35 U.S.C. 103(a) as being unpatentable over Hamilton and Bonsignore as applied to claims 1-10,12-22,24-28 above, and further in view of Cannell et al. (US 6,729,383). Hamilton and Bonsignore substantially disclose all of applicant's claimed invention as discussed above except for the limitation that the fluid is deionized water. Cannel discloses (figure 1 and column 19, lines 22-28) a fluidly cooling system wherein deionized water is selected to be the fluid for the purpose of providing a coolant with low cost, low corrosivity, simplicity of design and non-health hazard. Since Hamilton, and Bonsignore and Cannel are both from the same field of endeavor and/or analogous art, it would have been obvious to one having ordinary skill in the art at the time the invention was made to use Cannel's teaching in the combination device of Hamilton and Bonsignore for the purpose of providing a coolant with low cost, simplicity of design, low corrosivity and non-health hazard.

Conclusion

Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event,

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however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Tho v Duong whose telephone number is 571-272-4793. The examiner can normally be reached on M-F (first Friday off).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Henry Bennet can be reached on 571-272-4791. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



Tho v Duong
Examiner
Art Unit 3743



TD
April 12, 2005